

What is claimed is:

1           1. A method for identifying an antibacterial agent,  
2 the method comprising:

3           (a) contacting an S-yneS polypeptide with a test  
4 compound; and

5           (b) detecting an interaction of the test compound  
6 with the S-yneS polypeptide, wherein an interaction  
7 indicates that the test compound is an antibacterial agent.

1           2. A method of claim 1, further comprising:

2           (c) determining whether the test compound inhibits  
3 growth of bacteria, relative to growth of bacteria cultured  
4 in the absence of a test compound that interacts with the  
5 polypeptide, wherein inhibition of growth indicates that the  
6 test compound is an antibacterial agent.

1           3. A method of claim 1, wherein the polypeptide is  
2 derived from a non-pathogenic *Streptococcus* strain.

1           4. A method of claim 1, wherein the polypeptide is  
2 derived from a pathogenic *Streptococcus* strain.

1           5. A method of claim 1, wherein the test compound  
2 is immobilized on a substrate, and interaction of the test  
3 compound with the polypeptide is detected as immobilization  
4 of the polypeptide on the immobilized test compound.

1           6. A method of claim 1, wherein the test compound  
2 is selected from the group consisting of polypeptides,  
3 ribonucleic acids, small molecules, and deoxyribonucleic  
4 acids.

1           7. A method of claim 1, wherein:  
2           the S-yneS polypeptide is provided as a fusion  
3 protein comprising the S-yneS polypeptide fused to (i) a  
4 transcription activation domain of a transcription factor or  
5 (ii) a DNA-binding domain of a transcription factor;

6           the test compound is a fusion protein comprising the  
7 polypeptide fused to (i) a transcription activation domain  
8 of a transcription factor or (ii) a DNA-binding domain of a  
9 transcription factor, to interact with the fusion protein;  
10 and

11           interaction of the test compound with the  
12 polypeptide is detected as reconstitution of a transcription  
13 factor.

1           8. A pharmaceutical formulation comprising an  
2 antibacterial agent identified by the method of claim 1, and  
3 a pharmaceutically acceptable excipient.

1           9. A method for treating a bacterial infection in  
2 an organism, the method comprising administering to the  
3 organism a therapeutically effective amount of the  
4 pharmaceutical formulation of claim 8.

1           10. A pharmaceutical formulation comprising an  
2 antibacterial agent identified by the method of claim 4, and  
3 a pharmaceutically acceptable excipient.

1           11. A method for treating a *Streptococcus* infection  
2 in an organism, the method comprising administering to the  
3 organism a therapeutically effective amount of the  
4 pharmaceutical formulation of claim 10.

1           12. The method of claim 11, wherein the organism is  
2 a human or rodent.

1           13. A method for identifying an antibacterial  
2 agent, the method comprising:

3           (a) contacting an S-yneS polypeptide with a test  
4 compound;

5           (b) detecting a decrease in function of the  
6 polypeptide contacted with the test compound; and

7           (c) determining whether the test compound inhibits  
8 growth of bacteria, relative to growth of bacteria cultured  
9 in the absence of the test compound, wherein inhibition of  
10 growth indicates that the test compound is an antibacterial  
11 agent.

1           14. A method of claim 13, wherein the test compound  
2 is selected from the group consisting of polypeptides,  
3 ribonucleic acids, small molecules, and deoxyribonucleic  
4 acids.

1           15. A method for identifying an antibacterial  
2 agent, the method comprising:

3           (a) contacting a nucleic acid encoding S-yneS with a  
4 test compound; and

5           (b) detecting an interaction of the test compound  
6 with the nucleic acid, wherein an interaction indicates that  
7 the test compound is an antibacterial agent.

1           16. A method of claim 15, further comprising:

2           (c) determining whether a test compound inhibits  
3 growth of bacteria, relative to growth of bacteria cultured  
4 in the absence of the test compound that interacts the

5 nucleic acid, wherein inhibition of growth indicates that  
6 the test compound is an antibacterial agent.

1 17. A method of claim 15, wherein the test compound  
2 is selected from the group consisting of polypeptides, small  
3 molecules, ribonucleic acids, and deoxyribonucleic acids.

1 18. A method for identifying an antibacterial  
2 agent, the method comprising:

3 (a) contacting an ortholog of an S-yneS polypeptide  
4 with a test compound; and

5 (b) detecting an interaction of the test compound  
6 with the ortholog, wherein an interaction indicates that the  
7 test compound is an antibacterial agent.

1 19. A method of claim 18, further comprising:

2 (c) determining whether a test compound that  
3 interacts with the ortholog inhibits growth of bacteria,  
4 relative to growth of bacteria cultured in the absence of  
5 the test compound, wherein inhibition of growth indicates  
6 that the test compound is an antibacterial agent.

1 20. A method of claim 18, wherein the ortholog is  
2 derived from a non-pathogenic bacterium.

1 21. A method of claim 18, wherein the ortholog is  
2 derived from *Bacillus subtilis*.

1 22. A method of claim 21, wherein the ortholog is  
2 B-yneS.

1 23. A method of claim 18, wherein the ortholog is  
2 derived from a gram-positive bacterium.

1           24. A method of claim 18, wherein the ortholog is  
2 derived from a pathogenic bacterium.

1           25. A method of claim 18, wherein the test compound  
2 is immobilized on a substrate, and interaction of the test  
3 compound with the ortholog is detected as immobilization of  
4 the ortholog on the immobilized test compound.

1           26. A method of claim 18, wherein the test compound  
2 is selected from the group consisting of polypeptides,  
3 ribonucleic acids, small molecules, and deoxyribonucleic  
4 acids.

1           27. A method of claim 18, wherein:  
2 the ortholog is provided as a fusion protein  
3 comprising the ortholog fused to (i) a transcription  
4 activation domain of a transcription factor or (ii) a DNA-  
5 binding domain of a transcription factor;

6 the test compound is a fusion protein comprising a  
7 polypeptide fused to (i) a transcription activation domain  
8 of a transcription factor or (ii) a DNA-binding domain of a  
9 transcription factor, to interact with the ortholog; and

10 interaction of the test polypeptide of the test  
11 compound with the ortholog is detected as reconstitution of  
12 a transcription factor.

1           28. A method for identifying an antibacterial  
2 agent, the method comprising:

3           (a) contacting an ortholog of an S-ynes polypeptide  
4 with a test compound;

5           (b) detecting a decrease in function of the ortholog  
6 contacted by the test compound; and

7 (c) determining whether the test compound inhibits  
8 growth of bacteria, relative to growth of bacteria cultured  
9 in the absence of the test compound, wherein inhibition of  
10 growth indicates that the test compound is an antibacterial  
11 agent.

1 29. The method of claim 28, wherein the test  
2 compound is selected from the group consisting of  
3 polypeptides, ribonucleic acids, small molecules, and  
4 deoxyribonucleic acids.

1 30. A method of claim 28, wherein the ortholog is  
2 B-yneS.

1 31. A method of claim 28, wherein the ortholog is  
2 derived from a gram-positive bacterium.

1 32. A method of claim 28, wherein the ortholog is  
2 derived from a pathogenic bacterium.

1 33. A method for identifying an antibacterial  
2 agent, the method comprising:

3 (a) contacting a nucleic acid encoding an ortholog  
4 of S-yneS; and

5 (b) detecting interaction of the test compound with  
6 the nucleic acid, wherein interaction indicates that the  
7 test compound is an antibacterial agent.

1 34. The method of claim 33, further comprising:

2 (c) determining whether the test compound inhibits  
3 growth of bacteria, relative to growth of bacteria cultured  
4 in the absence of the test compound, wherein inhibition of

5 growth indicates that the test compound is an antibacterial  
6 agent.

1 35. The method of claim 33, wherein the test  
2 compound is selected from the group consisting of  
3 polypeptides, small molecules, ribonucleic acids, and  
4 deoxyribonucleic acids. .

1 36. A method of claim 33, wherein the ortholog is  
2 B-yneS.

1 37. A method of claim 33, wherein the ortholog is  
2 derived from a pathogenic bacterium.

1 38. A method for treating a mammal having a  
2 *Streptococcus pneumonia* infection, the method comprising  
3 inhibiting the function of an S-yneS polypeptide in  
4 *Streptococcus pneumonia* infecting the mammal.